

Main characteristics

- Absolute transducer
- Strokes from 50 to 4000mm (RK-_-_-_-_-N/S)
- Digital output RS422 Start/Stop (RK-_-_-_-_-S)
- Direct analog output (RK-_-_-_-_-N/K)
- Control of multiple cursors at minimum distance of 75 mm from one another (Start/Stop version only RK-_-_-_-_-S)
- Operating temperature: -30...+90°C
- Resistance to vibration (DIN IEC68T2/6 20 g)
- IP67 protection
- CE compatibility
- Power supply 18Vdc...30Vdc
- Optional 12Vdc power supply (RK-_-_-_-_-K)

Contactless linear position transducer with magnetostrictive technology: the absence of electrical contact on the cursor eliminates problems of wear and consumption and guarantees almost unlimited life. Designed for installation inside the cylinder. Available in three versions to satisfy different mechanical requirements and guarantee maximum sensor compactness compared to other solutions on the market. For the interface signal, you can choose between a start/stop interface (which allows the use of multiple cursors) and an analog interface that gives the displacement of a single cursor. Excellent linearity, repeatability, resistance to mechanical vibrations and shocks complete the product's specifications overview.

TECHNICAL DATA

Model	from 50 to 4000 mm (max. 1250 mm RK-_-_-_-_-K)
Measurement taken	Displacement
Position read sampling time (typical)	1 ms
Shock test DIN IEC68T2-27	100g, 11ms single shock
Vibrations DIN IEC68T2-6	20g, 10...2000Hz
Displacement speed	≤10 m/s
Max. acceleration.	≤ 100 m/s ² displacement
Resolution	infinite, limited by noise (10µm)
Working pressure	
RK-1 and RK-3	350 bar (peak max 500 bar)
RK-2	700 bar (peak max 1000 bar)

ENVIRONMENTAL DATA

Protection	IP 67
Operating temperature	-30°...+90°C for Pass = 0,4W -30°...+70°C for Pass = 0,8W (see table 1)
Storage temperature	-40°...+100°C
Coefficient temperature	0.005% FS / °C

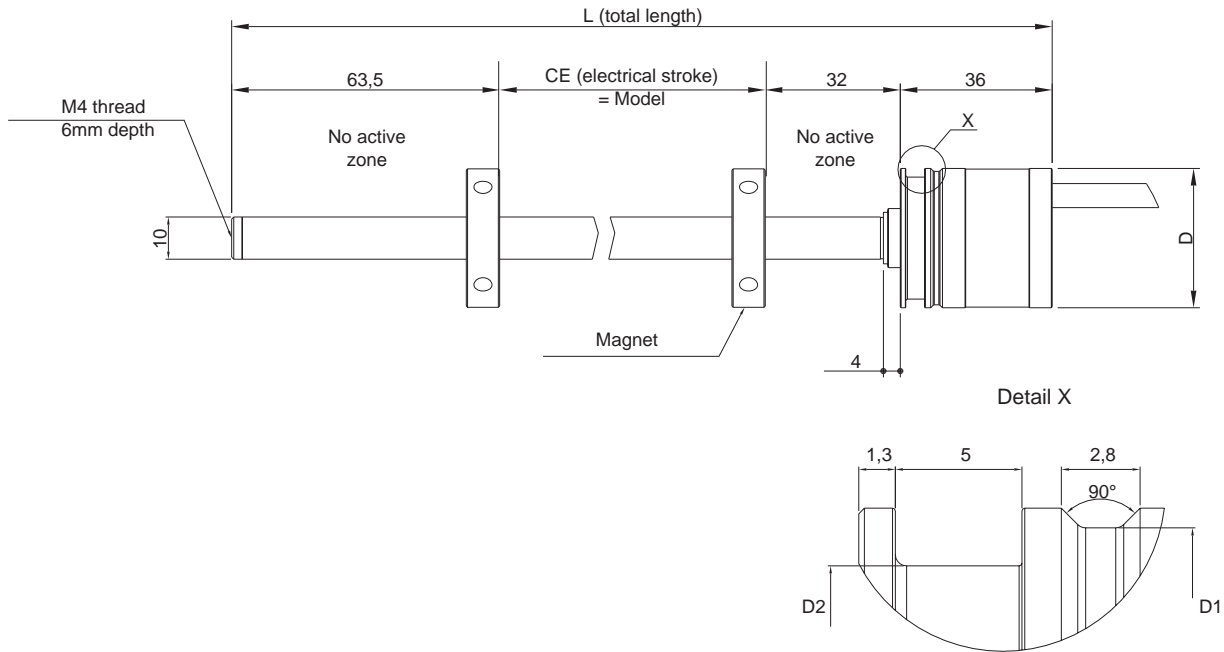
ELECTRICAL DATA

Nominal power supply	18...30Vdc (see table 1) (opt. 12Vdc (RK-_-_-_-_-K))
Max. power ripple	1Vpp
Output signal	Start/Stop (RK-_-_-_-_-S) 0,1...10,1Vdc (RK-_-_-_-_-N) 0,1...5,1Vdc (RK-_-_-_-_-K)
Max. analog output load	5KΩ
Max input for analog version	40mA (max)
Max input for START/STOP version	See table 1
Electric isolation	200Vdc
Protection against polarity inversion	Yes
Protection against overvoltage	Yes

TABLE 1 (work temperature and power required)
MODEL RK-_-_-_-_-S

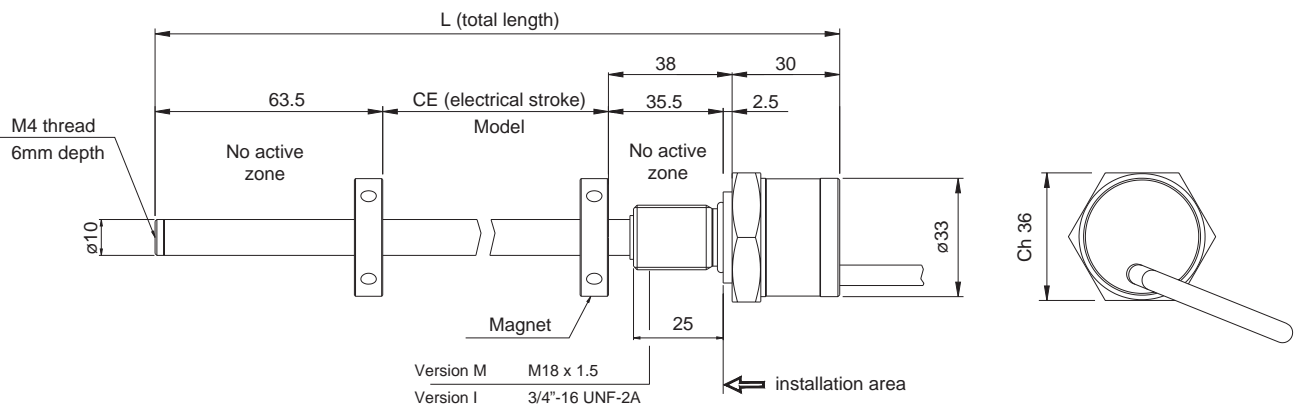
Power required	(Power supply -15V) * input
Input (function of sampling time)	20 mA for T = 5 msec 25 mA for T = 3 msec 30 mA for T = 1 msec
Input increment: (function of load 422)	0 mA for no load (max 50 mt) 10 mA for load 300 Ω 30 mA for load 120 Ω

MECHANICAL DIMENSIONS (RK-1 and RK-2)



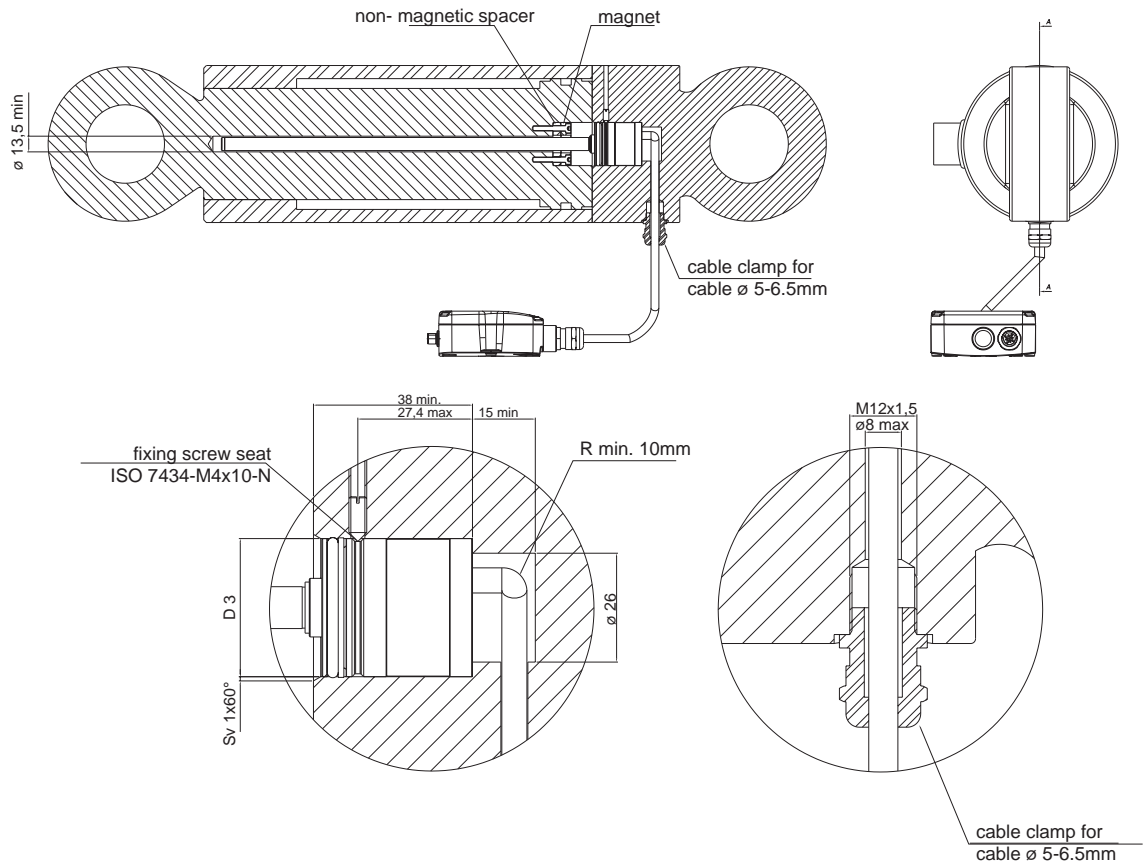
Model	Pressure	D	D1	D2
RK-1	350 bar	$\overset{0}{\varnothing} 30 \text{ h8-0.033}$	$\varnothing 28,6$	$\varnothing 25,9 \pm 0,05$
RK-2	700 bar	$\overset{0}{\varnothing} 33 \text{ h8-0.039}$	$\varnothing 31,6$	$\varnothing 28,9 \pm 0,05$

MECHANICAL DIMENSIONS (RK-3)



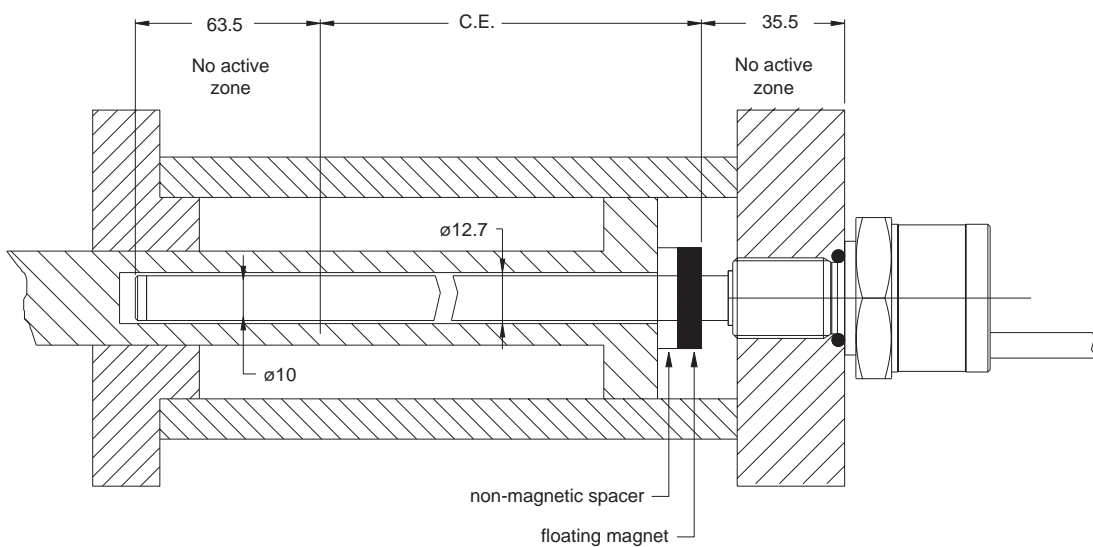
MOUNTING INSIDE A CYLINDER (RK-1 and RK-2)

RK-1 / RK-2: versions with internal flange, installation completely inside cylinder



Model	Pressure	D3
RK-1	350 bar	0.07 ø 30 h8-0.04
RK-2	700 bar	0.09 ø 33 h8-0.05

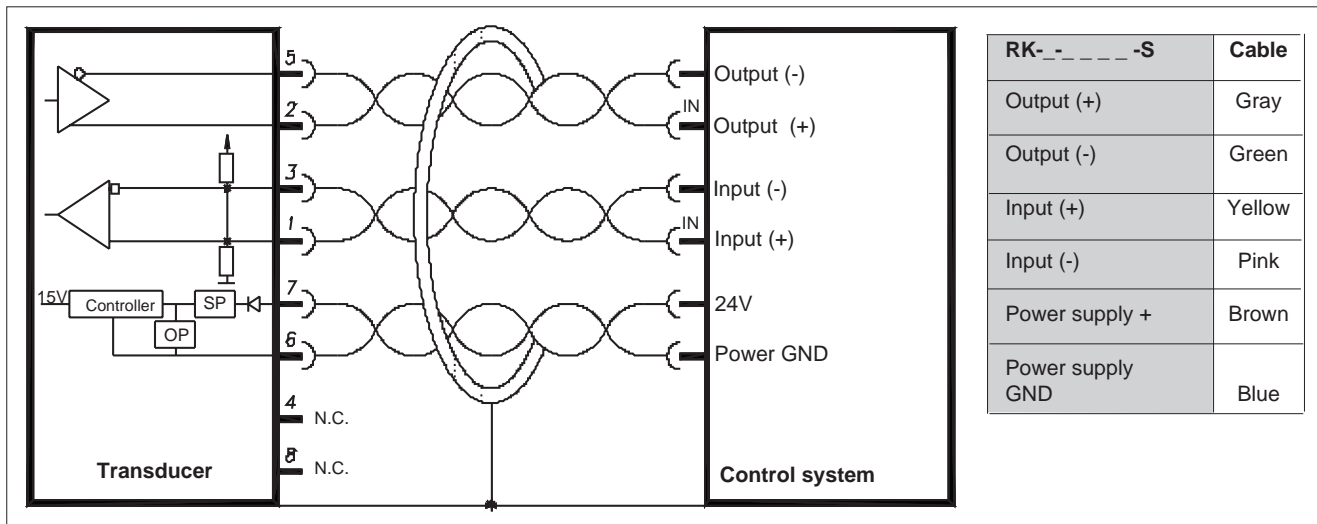
MOUNTING INSIDE A CYLINDER (RK-3)



ELECTRICAL / MECHANICAL DATA

Model	50	100	130	150	200	225	300	400	450	500	600	700	750	800	900	1000	1250	1500	1750	2000	2250	2500	2750	3000	3250	3500	3750	4000	
Electrical stroke (C.E.)	mm	Model																											
Independent linearity	± %F.S.	typical 0,02 (Max. 0,04)																											
Max. dimensions (L)	mm	Model + 131,5 (excluding cable)																											
Repeatability	mm	0,001 of the FS																											
Hysteresis	mm	< 0.01																											
Sampling time	mm	1 (1.5 for stroke from 1100 to 2000) (2 for stroke from ≥2000)																											

ELECTRICAL CONNECTIONS (RK- _ - _ - _ - S)



ELECTRICAL CONNECTIONS (RK- _ - _ - _ - N/K)

RK- _ - _ - _ - N	RK- _ - _ - _ - K	Cable
Output 0,1...10,1Vdc	Output 0,1...5,1Vdc	Yellow
Output GND	Output GND	Pink
Power supply +	Power supply +	Brown
Power supply GND	Power supply GND	Blue

DIGITAL OUTPUT RK- _ - _ - _ - S

Series RK- _ - _ - _ - S magnetostrictive transducers supply digital outputs in START/STOP format with RS422 differential serial transmission.

The transducer requests an Initialisation pulse that launches sampling. The following pulses are transmitted on the outputs:

Start: the Initialisation pulse retransmitted

Stop: the pulse corresponding to the position of each magnet.

The time between the Start pulse and the subsequent Stop pulses is proportional to the position of each magnet according to the "Magnetostrictive wave propagation speed" constant, equal to about 2900 m/Ssec.

$$P = \text{Time} * 2900\text{m/Sec}$$

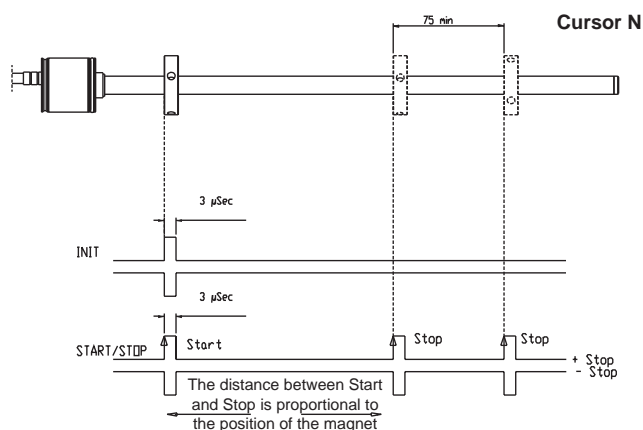
The correct propagation speed for each product is shown on the product label.

Resolution in terms of metres is linked to the resolution used to measure time

- 1 µSec (1MHz) ==> 2,9 mm
- 10 nSec (100 MHz) ==> 0,029mm
- 1 nSec (1GHz) ==> 2,9 µm

The measurement reference is the leading edge of the pulse.

Optimum width of the interrogation pulse is 3µSec, but the transducer works correctly for times from 1.5 to 5µSec



ORDER CODE

Position transducer

R K

0 0 0 0 X 0 0 0 X 0 X X

Head type	
Internal flange, max 350 bar	1
Internal flange, max 700 bar	2
Threaded external flange	3

Model

Output		
Start/Stop	Start/Stop interface	S
Analog	0,1...10,1Vdc interface (power supply 18...30Vdc)	N
Analog	0,1...5,1Vdc interface (power supply 12Vdc)	K

Connection cable to remote element (PUR)

00 = 1 mt 02 = 2 mt 03 = 3 mt
04 = 4 mt 05 = 5 mt 10 = 10 mt
15 = 15 mt

Threading

None (RK-1 and RK-2)	X
M18 x 1,5 (RK-3 standard)	M
3/4"-16UNF (RK-3 option)	I

Mechanical and/or electrical characteristics differing from those in the standard version may be arranged on request.

GEFRAN spa reserves the right to make aesthetic or functional changes at any time and without notice

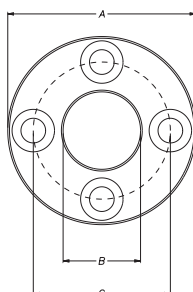
FLOATING CURSOR (to order separately)

P C U R

Cursors	
Cursor diameter 32.8	022
Cursor diameter 32.8 with 90° slit	023
Cursor diameter 25.4	024

Dimensions	A	B	C	Thickness
PCUR022	32.8	13.5	23.9	7.9
PCUR023				
PCUR024	25.4	13.5	-	

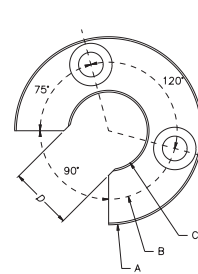
PCUR022



The PCUR022 is supplied with:

N° 8 Brass nuts M4
N° 8 Brass washers D4
N° 4 Brass screws M4x25

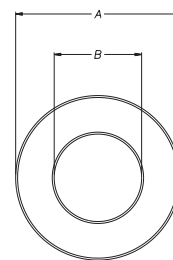
PCUR023



The PCUR023 is supplied with:

N° 4 Brass nuts M4
N° 4 Brass washers D4
N° 2 Brass screws M4x25

PCUR024

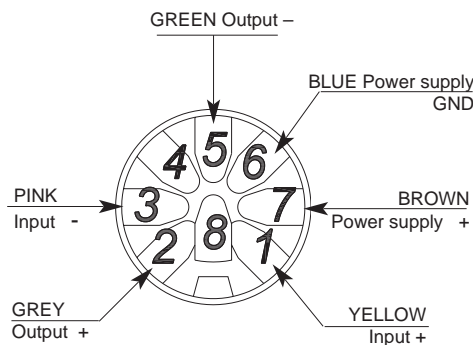


OPTIONAL ACCESSORIES (to order separately)

Non-magnetic spacer for mounting PCUR022 cursor
Cable clamp
Mobile male connector M12, 8 pins

available soon
PRE060
CON460

CON460 wiring diagram for interconnecting RK- - - - -S with remote electronics EK- -



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